



Karlstad Applied Analysis Seminar (2019)

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Introduction to modelling and simulation on spreading epidemics

Abstract

This seminar intentionally presents how a mathematical model and a social complex network can describe epidemiological phenomena. It is organised into two main parts including the analysis of epidemic models and the study of disease transmission on social complex networks. In stability analysis, the existence of stability in each compartmental epidemic model is adjudicated through the basic reproduction number. For application, the epidemic network model is developed to study the spreading behavior of the disease. The intervention strategies including vaccination and quarantine are introduced for the epidemic control. The simulation results have shown that the developed epidemic network model can capture the important features of the disease transmission in human society. Network hubs play a crucial role in disease transmission. Therefore, the intervention against the spreading epidemics should be executed through the network hubs.